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PATENT ABSTRACTS OF JAPAN

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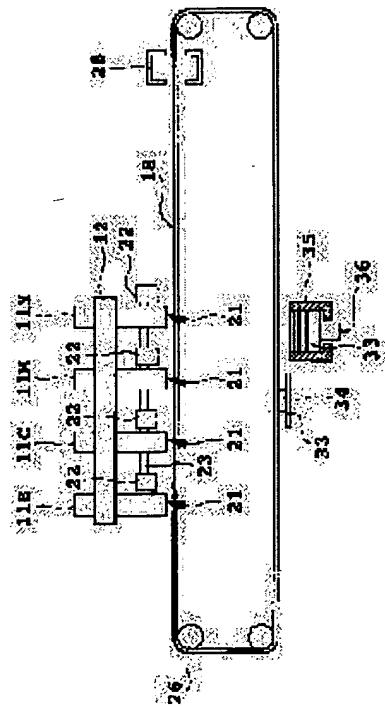
(72)Inventor : TSUKUDA KEIICHIRO

(54) IMAGE FORMING APPARATUS

(57)Abstract:

PROBLEM TO BE SOLVED: To solve such a problem that it is difficult to rapidly perform the preparatory ejection of a liquid jet head or a printing medium or a feed belt is stained in a full line type image forming apparatus.

SOLUTION: An image forming apparatus having a head bracket 12 to which an ink jet head 1 having jet orifices is attached and ejecting ink from the jet orifices of the ink jet head 11 to form an image on a printing medium is equipped with an ink receiving member 33 for receiving the ink preparatorily ejected from the jet orifices in order to keep the ejection state of ink from the jet orifices well and a feed belt 18 for moving the ink receiving member 33 to the ink receiving position opposed to the jet orifices of the ink jet head 11 present at a position ejecting ink to the printing medium 17 and a retracted position avoiding the interference with the printing medium 17 fed to the ink receiving position.



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CLAIMS

[Claim(s)]

[Claim 1] Image formation equipment which has the installation section of a liquid discharge head which has a delivery characterized by providing the following, breathes out a liquid from a delivery of said liquid discharge head, and forms an image in print data medium A liquid acceptance member which receives a liquid by which the reserve regurgitation is carried out from said delivery in order to keep good a discharge condition of a liquid from said delivery A delivery of said liquid discharge head in a location which carries out the regurgitation of the liquid for this liquid acceptance member to said print data medium, and a liquid acceptance location which counters A migration means moved to an evacuation location which avoids interference to said print data medium conveyed in this liquid acceptance location

[Claim 2] Image formation equipment according to claim 1 characterized by having had further a conveyance belt for conveying said print data medium, and this conveyance belt serving as said migration means.

[Claim 3] Said liquid acceptance member is image formation equipment according to claim 2 characterized by being attached in said conveyance belt removable through an attachment-and-detachment means.

[Claim 4] Said liquid acceptance member is image formation equipment given in any of claim 1 to claim 3 characterized by whether it is formed by member which does not absorb a liquid, and forming ***** in the front face they are.

[Claim 5] Said liquid acceptance member is image formation equipment given in any of claim 1 to claim 4 characterized by having a liquid absorption member which can carry out absorption maintenance of the liquid by which the reserve regurgitation was carried out they are.

[Claim 6] Said liquid acceptance member is image formation equipment given in any of claim 1 to claim 5 characterized by having a blade for wiping away a delivery side as for which said delivery of said liquid discharge head carries out a opening they are.

[Claim 7] A delivery of said liquid discharge head is image formation equipment given in any of claim 1 to claim 6 characterized by having continued and arranged to full [of a print field of said print data medium which met in the conveyance direction of said print data medium, and the crossing direction] they are.

[Claim 8] Said liquid discharge head is image formation equipment given in any of claim 1 to claim 7 characterized by having the regurgitation energy generation section for carrying out the regurgitation of the liquid from said delivery they are.

[Claim 9] Said regurgitation energy generation section is image formation equipment according to claim 8 characterized by having an electric thermal-conversion element which generates heat energy for making a liquid produce film boiling.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the image formation equipment which forms an image in print data medium using the liquid discharge head which has a delivery.

[0002]

[Description of the Prior Art] The delivery which will be in the condition of hardly being used with the image printed in the image formation equipment of the full line type which forms a color picture in print data medium using two or more liquid discharge heads which arranged the delivery covering the direction which intersects perpendicularly to the conveyance direction of print data medium to full [of a print field] exists in many cases. In case the liquid in the liquid route which is open for free passage to such a delivery forms a new image in print data medium, it becomes impossible to perform the normal regurgitation, since various solvents, moisture, etc. which are contained in this liquid evaporate and viscosity rises. Since it is such, reserve regurgitation actuation which carries out the regurgitation of the liquid from the delivery which is not used by then at least is performed for every count of the predetermined regurgitation of every predetermined time and a liquid so that the delivery which maintained the discharge condition of the liquid from all the deliveries of the liquid discharge head arranged along the conveyance direction of print data medium good, and was not used for the prolonged print can also do the regurgitation of a liquid normally.

[0003] In such full line type image formation equipment, two or more liquid discharge heads can be arranged at intervals of predetermined along the conveyance direction of the endless conveyance belt for conveying print data medium, and can be gone up and down in the opposite direction with a platen on both sides of this conveyance belt. It is arranged after the head cap for receiving the liquid by which the reserve regurgitation is carried out has half-pitch ** made it the side of each liquid discharge head from the delivery of a liquid discharge head to the array gap of a liquid discharge head, and horizontal migration is possible to directly under [of a liquid discharge head] along the conveyance direction of print data medium.

[0004] That is, in advance of the print activity over print data medium, it goes up so that a liquid discharge head may separate from a platen, and after the head cap which exists subsequently to a position in readiness moves directly under a liquid discharge head, the reserve regurgitation of the liquid is carried out from the delivery of a liquid discharge head, and a head cap receives this waste ink. Thus, after performing recovery of a liquid discharge head, a head cap is moved to the original position in readiness, a liquid discharge head is further dropped to a platen side to a print position, the processing liquid for driving a conveyance belt, conveying print data medium on a platen, and adjusting the print nature of ink and/or the ink to print data medium from each liquid regurgitation beef fat is formed in discharge, and a predetermined image is formed in print data medium.

[0005] In addition, with the image formation equipment of the serial type which makes the scan migration of the liquid discharge head carry out in the direction which intersects perpendicularly to the conveyance direction of print data medium, the liquid receptacle which receives the liquid by which the reserve regurgitation is carried out to the end side of the scan migration direction of a liquid discharge head from a liquid discharge head is arranged, or the delivery of a liquid discharge head is made to carry out the reserve regurgitation of the liquid for the delivery side which carries out a opening into a wrap capping member.

[0006]

[Problem(s) to be Solved by the Invention] In the image formation equipment of the full line type with which a liquid discharge head has the almost same width of face as print data medium, in order to move the whole liquid discharge head to which weight increases in the case of reserve regurgitation actuation, it is necessary to use the big driving source of high power. Moreover, the time amount which the duration for moving a liquid discharge head increases, and reserve

regurgitation actuation takes becomes long, and the nonconformity which spoils the advantage of the full line type image formation equipment that print speed is high-speed is produced.

[0007] Since it is such, in order to employ the property of the high-speed print in full line type image formation equipment efficiently, in case reserve regurgitation actuation is performed, a liquid discharge head is not moved from a print position, the reserve regurgitation is carried out to portions other than the print field of print data medium, or how to carry out the reserve regurgitation to a conveyance hair side of belt side, and wipe away to it is considered.

[0008] however, by the method of carrying out the reserve regurgitation of the liquid to portions other than the print field of print data medium Adopting in addition to liquids, such as high ink of especially lightness, by the method of it being substantially difficult and carrying out the reserve regurgitation of the liquid to a conveyance hair side of belt side When it was necessary to wipe this away, unless the liquid by which the reserve regurgitation was carried out to the conveyance belt was wiped away thoroughly, there was a possibility that the rear face of print data medium conveyed next might receive dirt with a liquid.

[0009]

[Objects of the Invention] The object of this invention is to offer the image formation equipment which can perform reserve regurgitation actuation promptly, without soiling print data medium and a conveyance belt, even if it is a full line type.

[0010]

[Means for Solving the Problem] Image formation equipment by this invention has the installation section of a liquid discharge head which has a delivery. A liquid acceptance member which is image formation equipment which breathes out a liquid from a delivery of said liquid discharge head, and forms an image in print data medium, and receives a liquid by which the reserve regurgitation is carried out from said delivery in order to keep good a discharge condition of a liquid from said delivery, A delivery of said liquid discharge head in a location which carries out the regurgitation of the liquid for this liquid acceptance member to said print data medium, and a liquid acceptance location which counters, It is characterized by having a migration means moved to an evacuation location which avoids interference to said print data medium conveyed in this liquid acceptance location.

[0011] According to this invention, on the occasion of reserve regurgitation of a liquid from a delivery of a liquid discharge head, a migration means moves a liquid acceptance member to a liquid acceptance location, a liquid discharge head drives in this condition, and the reserve regurgitation of the liquid is carried out to a liquid acceptance member from a delivery. After an appropriate time, again, with a migration means, a liquid acceptance member in a liquid acceptance location is moved to an evacuation location, print data medium is conveyed in this condition in a delivery of a liquid discharge head, and a liquid acceptance location which counters, a liquid is breathed out to print data medium, and an image is formed.

[0012]

[Embodiment of the Invention] In the image formation equipment by this invention, the conveyance belt for conveying print data medium is prepared further, you may make it make this conveyance belt make it serve a double purpose as a migration means, and a liquid acceptance member may be attached in a conveyance belt removable through an attachment-and-detachment means in this case.

[0013] Moreover, a liquid acceptance member is formed by the member which does not absorb a liquid, or you may make it form ***** in the front face.

[0014] It may have the liquid absorption member to which a liquid acceptance member can carry out absorption maintenance of the liquid by which the reserve regurgitation was carried out, or you may have a blade for wiping away the delivery side as for which the delivery of a liquid discharge head carries out a opening.

[0015] Furthermore, the delivery of a liquid discharge head may be continued and arranged to full [of the print field of print data medium which met in the conveyance direction of said print data medium, and the crossing direction].

[0016] You may have the regurgitation energy generation section for a liquid discharge head to carry out the regurgitation of the liquid from a delivery, and the regurgitation energy generation section may have the electric thermal-conversion element which generates the heat energy for making a liquid produce film boiling in this case.

[0017]

[Example] Although the example which applied the image formation equipment by this invention to the full line type ink jet printer is explained to details, referring to drawing 1 - drawing 3 , this invention can combine not only an example such but these further, or can apply them to other technology which should be included by the concept of this invention indicated by the claim of this description.

[0018] The appearance of this example is shown in drawing 1 , and the side configuration of the body is shown in drawing 2 . That is, the ink jet printer in this example is equipped with the head bracket 12 with which it is an usable

multicolor printer and four ink jet arm heads 11Y, 11M, 11C, and 11B (these are hereafter described collectively to be the ink jet arm heads 11) in which the regurgitation [these yellow ink, Magenta color ink, cyanogen color ink, and black ink] is possible are carried in four kinds of colors, i.e., yellow, a Magenta color, a cyanogen color, and black ink. The ink tanks 13Y, 13M, 13C, and 13B (these are hereafter described to be the ink tanks 13 collectively) which store yellow ink, Magenta color ink, cyanogen color ink, and black ink are connected with the ink jet arm head 11 carried in the head bracket 12 through connecting piping 14, respectively, and each ink tank 13 is connected to it exchangeable to connecting piping 14.

[0019] ON of the energization to the electric thermal-conversion element which constitutes the regurgitation energy generation section which was included in the ink jet arm head 11, and which is not illustrated by the head driver 16 linked to a control unit 15, i.e., an exoergic resistor, and OFF are changed, respectively, and it is made to breathe out from the delivery which does not illustrate ink with growth of film boiling produced in the ink which touches an exoergic resistor. These ink jet arm head 11 is arranged at intervals of predetermined sequentially from the upstream along the conveyance direction of the conveyance belt 18 so that it may counter with a platen 19 on both sides of the endless conveyance belt 18 for conveying print data medium 17, and these deliveries are continued and formed in full [of the print field of print data medium 17 which intersects perpendicularly to the conveyance direction of print data medium 17 by the conveyance belt 18].

[0020] A head migration means 20 by which that actuation is controlled by the control unit 15 can be connected with the head bracket 12, and it can go up and down now in the opposite direction with a platen 19 by actuation of this head migration means 20. In the side of each ink jet arm head 11 which met in the conveyance direction of print data medium 17, the head cap 22 of a wrap sake is arranged, respectively in the delivery side 21 of the ink jet arm head 13 a delivery places [the arm head] a opening upside down, and these head cap 22 is in the condition of having bundled up at the array gap and this gap of the ink jet arm head 11, and having been held, with the cap bracket 23 (refer to drawing 2). In the condition of a cap migration means 24 by which the actuation is controlled by the control unit 15 being connected with the cap bracket 23, and not doing the print activity over print data medium 17 Each head cap 22 moves directly under the delivery side 21 of the ink jet arm head 11 by actuation of this cap migration means 24. By downward actuation of the further head bracket 12 It sticks to the delivery side 21 so that the head cap 22 may cover the delivery of the ink jet arm head 11, and evaporation of the ink from these deliveries is prevented.

[0021] The actuation is controlled by Motor Driver 27 which the conveyance belt 18 which conveys print data medium 17 was almost wound around the belt driving roller 26 connected with the roller drive motor 25, and was connected with the control unit 15. The electrification machine 28 for sticking print data medium 17 to the conveyance belt 18 by charging the conveyance belt 18 is formed in the upstream of this conveyance belt 18, and ON of that energization and OFF are controlled by the electrification machine driver 29 which connects this electrification machine 28 to a control unit 15. The motor 31 for feeding for carrying out the actuation revolution of the feed roller 30 of one of these is connected with one side of the feed roller 30 of the couple for supplying print data medium 17 on the conveyance belt 18, and that actuation is controlled by Motor Driver 32 which connects this motor 31 for feeding to a control unit 15.

[0022] The holder 34 which holds the ink acceptance member 33 for receiving the ink by which the reserve regurgitation is carried out removable is formed in the conveyance belt 18 from the delivery, and this holder 34 has the location and configuration in which it does not interfere to the ink jet arm head 11. The shape of a sheet of the rectangle in which fiber, a high-polymer absorbent, etc. were included has come for the ink acceptance member 33 in this example to be able to carry out absorption maintenance of the ink of nothing and a certain amount of amount in ink acceptance member 33 the very thing. This liquid acceptance member 33 is held in the condition of having been put into the rack 35 prepared in the opposite hand of the ink jet arm head 11 on both sides of the conveyance belt 18, and a holder 34 is equipped with it one [at a time] by the supply means 36 attached to this rack 35 if needed.

[0023] The ink acceptance member 33 held at the holder 34 is conveyed with the conveyance belt 18, it moves to directly under [of the ink jet arm head 11 in a print position as shown in drawing], i.e., the liquid acceptance location of this invention, and actuation of each ink jet arm head 11 is controlled to become the timing to which the ink by which the reserve regurgitation is carried out from the delivery of each ink jet arm head 11 reaches accuracy to the ink acceptance member 33. Usually, what is necessary is to make the ink acceptance member 33 into the thickness of the degree which goes into the crevice with a holder 34, and just to have the thickness of the degree in which it does not interfere to the ink jet arm head 11 in a print position, since the distance of the ink jet arm head 11 under print activity and print data medium 17 is about several [at most] mm from 1mm order.

[0024] When conveying print data medium 17 and shifting to a print activity, after reserve regurgitation actuation of the ink jet arm head 11 is completed, So that the ink acceptance member 33 and print data medium 17 which are held through the holder 34 at the conveyance belt 18 may not interfere Although it is not necessary to remove the ink

acceptance member 33 from a holder 34 when the conveyance timing of print data medium 17 can be set up. When that is not right, or when there is no additional coverage in the ink absorbed amount which can hold the ink acceptance member 33 to the amount of ink by which the reserve regurgitation is carried out from the ink jet arm head 11, it is necessary to remove the ink acceptance member 33 from a holder 34 according to the ink absorbed amount of the ink acceptance member 33. This -- for example, it is also possible to remove the ink acceptance member 33 from a holder 34, and to discard, or to return to a rack 35 using the acceptance member removal means which is not illustrated, and to control to wait for and carry out periodic duty of the desiccation of ink.

[0025] Thus, the location which it is the downstream, and the portion of the conveyance belt 17 of a before [the carrying-in location of print data medium 17] was equivalent to the evacuation location of this invention in the ink acceptance member 33, and removed the ink acceptance member 33 from the conveyance belt 18 rather than the ink jet arm head 11 in a print position is equivalent to the same evacuation location.

[0026] By the way, the delivery side 21 of the ink jet arm head 11 has the inclination for minute ink to adhere in connection with the regurgitation of the ink from a delivery, and for the fiber piece which disperses with conveyance of print data medium 17 in connection with this to adhere to the delivery side 21 of the ink jet arm head 11. Since it becomes the cause to which the flight direction of the delivery side 21 and the ink drop which will carry out the regurgitation from this delivery if it adheres especially near the delivery changes such a foreign matter, and print grace is reduced, wiping away the delivery side 21 of the ink jet arm head 11 is performed. In the former, although it is necessary to do this eradication activity more frequently than recoveries, such as reserve regurgitation mentioned above, since the blade for wiping away the delivery side 21 on the head cap 22 mentioned above is prepared, this eradication activity needs to move [both] the ink jet arm head 11 and the head cap 22, and leads to lowering of a throughput.

[0027] As shown in drawing 3 showing the appearance of other examples of the liquid acceptance member by this invention from such a viewpoint. The blade 37 which has the flexibility formed by the synthetic rubber for wiping away the delivery side 21 of the ink jet arm head 11 etc. in the ink acceptance member 33 which makes the shape of a rectangular sheet is protruded. By doing simultaneously reserve regurgitation actuation of the ink jet arm head 11, and the eradication activity of the delivery side 21, it is possible to improve the throughput of the full line type ink jet printer like this example.

[0028] Although the ink acceptance member 33 was attached in the conveyance belt 18 through the holder 34, static electricity electrification of the conveyance belt 18 is carried out using the electrification machine 28, and you may make it make the ink acceptance member 33 hold to the conveyance belt 18 according to this electrostatic force in the example mentioned above.

[0029] Moreover, although the configuration which has a porous material was adopted in the example mentioned above so that the ink acceptance member 33 might carry out absorption maintenance of the ink by which the reserve regurgitation was carried out from the ink jet arm head 11. When there is no possibility [like] that the ink by which the reserve regurgitation was carried out from the ink jet arm head 11 may flow out of this ink acceptance member 33 at the time of conveyance of the ink acceptance member 33, The ink acceptance member 33 may be formed with a material which does not absorb ink, or it may be made to give a water-repellent finish on the front face of the ink acceptance member 33. By this, whenever it performs reserve regurgitation processing, the ink acceptance member 33 is cleaned, and it becomes possible to repeat and use one ink acceptance member 33 by removing ink from this ink acceptance member 33. In this case, it is effective to perform crepe processing to the front face of the ink acceptance member 33, or to form a weir etc. in it so that ink cannot flow out easily at the time of conveyance of the ink acceptance member 33 and may become it from the ink acceptance member 33.

[0030] In addition, this invention is equipped with means (for example, an electric thermal-conversion element, a laser beam, etc.) to generate heat energy as energy used in order to make the regurgitation of a liquid perform, and brings about the effect which was excellent in the image formation equipment of the ink jet method which makes the change of state of a liquid occur with this heat energy. It is because the densification of a print and highly minute-ization can be attained according to this method.

[0031] About the typical configuration and typical principle, what is performed using the fundamental principle currently indicated by the U.S. Pat. No. 4723129 description and the 4740796 description, for example is desirable. Although this method is applicable to both the so-called mold on demand and a continuous system. For the electric thermal-conversion element which is especially arranged corresponding to the sheet and passage where the liquid is held in the case of a mold on demand. Heat energy is generated by impressing at least one driving signal which gives the rapid temperature rise exceeding nucleate boiling corresponding to print information. Since the heat operating surface of a liquid discharge head is made to produce film boiling and the air bubbles in the liquid corresponding to this driving signal can be formed by one to one as a result, it is effective. By growth and contraction of these air bubbles, a liquid is

made to breathe out through a delivery and at least one drop is formed. If this driving signal is made into a pulse configuration, since growth contraction of air bubbles will be performed appropriately instancy, the regurgitation of a liquid excellent in especially responsibility can be attained, and it is more desirable. As a driving signal of this pulse configuration, what is indicated by the U.S. Pat. No. 4463359 description and the 4345262 description is suitable. In addition, if the conditions indicated by the U.S. Pat. No. 4313124 description of invention about the rate of a temperature rise of the above-mentioned heat operating surface are adopted, the further excellent print can be performed.

[0032] As a configuration of a liquid discharge head, moreover, besides a combination configuration (right-angle liquid flow channel in which the straight-line-like liquid flow channel or the electric thermal-conversion element by which the electric thermal-conversion element has been arranged along a liquid route carries out a right pair to a delivery across a liquid route) with a delivery, a liquid route, and an electric thermal-conversion element which are indicated by each above-mentioned description The configuration using the U.S. Pat. No. 4558333 description which indicates the configuration arranged to the field to which the heat operation section is crooked, and a U.S. Pat. No. 4459600 description is also included in this invention. In addition, the effect of this invention is effective also as a configuration based on JP,59-123670,A which indicates the configuration which makes a common slit the regurgitation section of an electric thermal-conversion element to two or more electric thermal-conversion elements, and JP,59-138461,A which indicated the configuration whose puncturing which absorbs the pressure wave of heat energy is made to correspond to the regurgitation section. Namely, no matter the gestalt of a liquid discharge head may be what thing, it is because it can print now efficiently certainly according to this invention.

[0033] It is a book to add the recovery means for making proper the discharge condition of the liquid from a liquid discharge head, a preliminary auxiliary means, etc. as a configuration of the image formation equipment of this invention. If these are mentioned concretely, a preheating means to heat using the capping means against a liquid discharge head, a cleaning means, application of pressure or an attraction means, an electric thermal-conversion element, heating elements different from this, or such combination can be mentioned.

[0034] moreover, two or more ink which differs in an others and print color or concentration (lightness) although only one piece was prepared also about the class and the number of a liquid discharge head which are carried, for example corresponding to monochromatic ink -- corresponding -- two or more pieces -- more than -- it may be prepared. That is, this invention is very effective not only in the printing mode of only which mainstream color black, for example as a printing mode of image formation equipment but equipment equipped with at least one of each of the full color printing mode by the double color color of a color or color mixture which is different in whether a liquid discharge head is constituted in one, or it is based on two or more combination although any are sufficient. In this case, it is also effective to carry out the regurgitation of the processing liquid (print disposition top liquid) for adjusting the print nature of ink according to the class and printing mode of print data medium to print data medium from dedication or a common liquid discharge head.

[0035] Furthermore, in the example of this invention explained above, it may solidify less than [a room temperature or it], and what is softened or liquefied at a room temperature may be used, or by the ink jet method, since what carries out temperature control is common as a temperature control is performed for the liquid itself within the limits of 30 degrees C or more 70 degrees C or less and it is in a stability regurgitation range about the viscosity of a liquid, what makes the shape of liquid may be used at the time of activity print signal grant. In addition, in order to prevent the temperature up by heat energy positively by making it use it as energy of the change of state from a solid condition to a liquid condition, or in order to prevent evaporation of a liquid, what solidifies in the state of neglect and is liquefied with heating may be used. Anyway, it liquefies by grant according to the print signal of heat energy, and this invention can be applied also when using the thing of the property which will not be liquefied without grant of heat energy, such as that by which a liquid is breathed out, and a thing which it already begins to solidify when reaching print data medium. The liquid in such a case is good for a porosity sheet crevice or a breakthrough which is indicated by JP,54-56847,A or JP,60-71260,A also as liquefied or a gestalt which counters to an electric thermal-conversion element in the condition of having been held as a solid. In this invention, the most effective thing performs the film-boiling method mentioned above to each liquid mentioned above.

[0036] in addition, as a gestalt of the image formation equipment concerning this invention Although used as an image printing terminal of information management systems, such as a computer, others, You may be what takes the gestalt of the reproducing unit combined with the reader etc., the facsimile apparatus which has a transceiver function further, or textile-printing equipment. As print data medium A three-dimension spacial configuration object etc. can be mentioned else [, such as the shape of a sheet, long paper or a textile or the timber which makes tabular or a stone, resin, glass, and a metal,].

[0037]

[Effect of the Invention] The delivery of the liquid discharge head in the location which carries out the regurgitation of the liquid for the liquid acceptance member which receives the liquid by which the reserve regurgitation is carried out from a delivery to print data medium according to this invention, and the liquid acceptance location which counters, Since the migration means moved to the evacuation location which avoids the interference to print data medium conveyed in this liquid acceptance location was established In case reserve regurgitation actuation is especially performed in full line type image formation equipment, quick reserve regurgitation actuation is attained without it becoming unnecessary to move a liquid discharge head, and spoiling the advantage of a high-speed print.

[0038] When the conveyance belt for conveying print data medium is prepared further and this conveyance belt is made to make it serve a double purpose as a migration means, when not conveying print data medium, reserve regurgitation actuation can be attained, and it is not necessary to add the additional device for moving a liquid acceptance member, and image formation equipment can be packed into a compact.

[0039] When the liquid absorption member which can carry out absorption maintenance of the liquid by which the reserve regurgitation was carried out is prepared in a liquid acceptance member, it can prevent that prevent scattering of a liquid and image formation equipment is soiled.

[0040] When the blade for wiping away the delivery side as for which the delivery of a liquid discharge head carries out a opening is prepared in a liquid acceptance member, nonconformity with which print data medium is soiled at the time of a print activity can be beforehand prevented by wiping away the drop adhering to the delivery side of the liquid discharge head after the reserve regurgitation.

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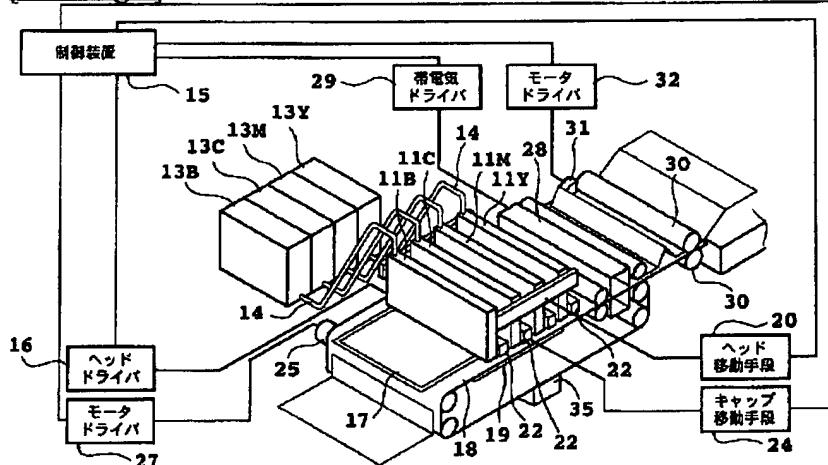
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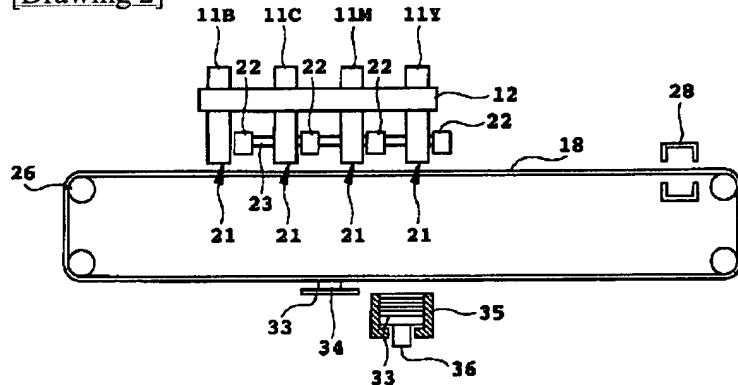
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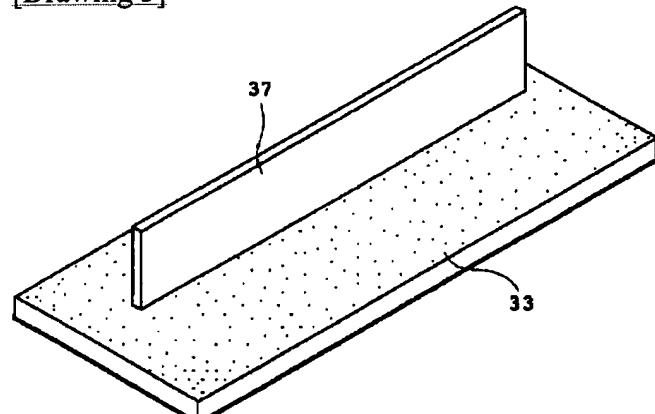
[Drawing 1]



[Drawing 2]



[Drawing 3]



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